

**LISTING OF THE CLAIMS**

Claims 1-78 were originally pending. Please amend claims 1-76 and 78. Kindly cancel claim 77 without prejudice. No claims are added or withdrawn. Accordingly, claims 1-76 and 78 are currently pending.

The following listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently amended) In a distributed computing environment, a computer-implemented method for ~~dynamically~~ implementing workflow responsive to a directory object state change, the method comprising:

automatically detecting a state change to an object in a directory; and

responsive to detecting the state change, automatically:

mapping the state change to the object to a workflow comprising a set of tasks; and

executing the tasks to achieve a desired state in the directory.

2. (Currently amended) A ~~The method as recited in~~ of claim 1, wherein executing the tasks further comprises storing the desired state.

3. (Currently amended) A ~~The method as recited in~~ of claim 1, wherein executing the tasks further comprises continuously executing an operation of a task of the tasks until convergence of the desired state is identified.

1           4.     (Currently amended) A The method as recited in of claim 1, wherein  
2     executing the tasks further comprises storing a sequence of operations based on  
3     the tasks.

4  
5           5.     (Currently amended) A The method as recited in of claim 1, wherein  
6     executing the tasks further comprises storing information corresponding to one or  
7     more directory objects to which the workflow applies.

8  
9           6.     (Currently amended) A The method as recited in of claim 1, wherein  
10    executing the tasks further comprises storing status information based on  
11    respective status of at least one subset of the tasks.

12  
13          7.     (Currently amended) A The method as recited in of claim 1, wherein  
14    mapping the state change to the object further comprises evaluating the state  
15    change to the object based on a declarative condition stored as a text string on an  
16    object instance of a content class defined by the directory schema.

17  
18          8.     (Currently amended) A The method as recited in of claim 1, wherein  
19    a task of the tasks comprises any combination of a declarative condition or an  
20    operation that is stored as a text string on an object instance of a content class  
21    defined by the directory schema.

22  
23          9.     (Currently amended) A The method as recited in of claim 1, wherein  
24    semantics of the workflow are based on a workflow schema.  
25

1           10.   (Currently amended) A The method ~~as recited in~~ of claim 1, wherein  
2 mapping the state change to the object, semantics of the mapping are based on an  
3 event association object schema.

4  
5           11.   (Currently amended) A The method ~~as recited in~~ of claim 1, wherein  
6 executing the tasks at least one subset of the tasks are executed with respect to one  
7 another based on an order of execution relationship comprising a finish-start  
8 relationship, a parallel execution relationship, a precedence constraint relationship,  
9 or a task priority relationship.

10  
11           12.   (Currently amended) A The method ~~as recited in~~ of claim 1, wherein  
12 executing the tasks at least one subset of the tasks is executed with respect to one  
13 another based on a precedence constraint relationship or a task priority  
14 relationship.

15  
16           13.   (Currently amended) A The method ~~as recited in~~ of claim 1, wherein  
17 the method further comprises:

18           monitoring a status corresponding to a task of the tasks;

19           storing the status on a status monitoring object; and

20           wherein a content class in the directory schema defines the status-  
21 monitoring object.

22  
23           14.   (Currently amended) A The method ~~as recited in~~ of claim 1, wherein  
24 the method further comprises:

25           monitoring a set of directory resources affected by the workflow;

1 storing the directory resources on a status monitoring object; and  
2 wherein a content class in the directory schema defines the status-  
3 monitoring object.

4  
5 15. (Currently amended) A The method as recited in of claim 1, wherein  
6 the method further comprises:

7 monitoring a status corresponding to an operation of the workflow;  
8 determining that the status comprises a failure status;  
9 responsive to the determining, taking a corrective action to advance the  
10 workflow in view of the failure status; and

11 wherein a content class in the directory schema defines the status-  
12 monitoring object.

13  
14 16. (Currently amended) A The method as recited in of claim 1, wherein  
15 executing the tasks further comprises:

16 updating a status corresponding to a task in the workflow; and  
17 responsive to the updating, evaluating the workflow to determine that a  
18 next task of the tasks to be implemented.

19  
20 17. (Currently amended) A The method as recited in of claim 1, wherein  
21 the tasks represent an inverse set of tasks that were previously performed as part of  
22 a different workflow.

23  
24 18. (Currently amended) A The method as recited in of claim 1, wherein  
25 the tasks implement a policy with respect to one or more directory resources, and

1 wherein mapping the state change to the object further comprises automatically  
2 determining the workflow based on the policy.

3  
4 19. (Currently amended) A computer-readable medium comprising  
5 computer-executable instructions for ~~dynamically implementing to implement~~  
6 workflow responsive to a directory object state change, the computer-executable  
7 instructions comprising instructions for:

8 detecting a state change to an object in a directory; and

9 responsive to detecting the state change:

10 mapping the state change to the object to a workflow comprising a  
11 set of tasks; and

12 executing the tasks to achieve a desired state in the directory.

13  
14 20. (Currently amended) A The computer-readable medium ~~as recited in~~  
15 of claim 19, wherein the instructions for executing the tasks further comprise  
16 instructions for storing the desired state.

17  
18 21. (Currently amended) A The computer-readable medium ~~as recited in~~  
19 of claim 19, wherein the instructions for executing the tasks further comprise  
20 instructions for continuously executing an operation of a task of the tasks until  
21 convergence of the desired state is identified.

22  
23 22. (Currently amended) A The computer-readable medium ~~as recited in~~  
24 of claim 19, wherein the instructions for executing the tasks further comprise  
25 instructions for storing a sequence of operations based on the tasks.

1  
2 23. (Currently amended) A The computer-readable medium ~~as recited in~~  
3 of claim 19, wherein instructions for executing the tasks further comprise  
4 instructions for storing information corresponding to one or more directory objects  
5 to which the workflow applies.

6  
7 24. (Currently amended) A The computer-readable medium ~~as recited in~~  
8 of claim 19, wherein the instructions for executing the tasks further comprise  
9 instructions for storing status information based on respective status of at least one  
10 subset of the tasks.

11  
12 25. (Currently amended) A The computer-readable medium ~~as recited in~~  
13 of claim 19, wherein the instructions for mapping the state change to the object  
14 further comprise instructions for evaluating the state change to the object based on  
15 a declarative condition stored as a text string on an object instance of a content  
16 class defined by ~~the~~ a directory schema.

17  
18 26. (Currently amended) A The computer-readable medium ~~as recited in~~  
19 of claim 19, wherein a task of the tasks comprises any combination of declarative  
20 conditions and operations that are stored as a text string on an object instance of a  
21 content class defined by ~~the~~ a directory schema.

22  
23 27. (Currently amended) A The computer-readable medium ~~as recited in~~  
24 of claim 19, wherein semantics of the workflow are based on a workflow schema.  
25

1           28. (Currently amended) A The computer-readable medium ~~as recited in~~  
2 of claim 19, wherein the instructions for mapping the state change to the object,  
3 semantics of the mapping are based on an event association object schema.

4  
5           29. (Currently amended) A The computer-readable medium ~~as recited in~~  
6 of claim 19, wherein the instructions for executing the tasks, at least one subset of  
7 the tasks are executed with respect to one another based on an order of execution  
8 relationship comprising a finish-start relationship, a parallel execution  
9 relationship, a precedence constraint relationship, or a task priority relationship.

10  
11           30. (Currently amended) A The computer-readable medium ~~as recited in~~  
12 of claim 19, wherein the instructions for executing the tasks, at least one subset of  
13 the tasks are executed with respect to one another based on a precedence  
14 constraint relationship or a task priority relationship.

15  
16           31. (Currently amended) A The computer-readable medium ~~as recited in~~  
17 of claim 19, wherein the computer-executable instructions further comprise  
18 instructions for:

19           automatically:

20                   monitoring a status corresponding to a task of the tasks; and

21                   storing the status on a status monitoring object; and

22           wherein a content class in the directory schema defines the status-  
23 monitoring object.

32. (Currently amended) A The computer-readable medium as recited in  
of claim 19, wherein the computer-executable instructions further comprise  
instructions for:

automatically:

monitoring a set of directory resources affected by the workflow;

and

storing the directory resources on a status monitoring object; and

wherein a content class in the directory schema defines the status-  
monitoring object.

33. (Currently amended) A The computer-readable medium as recited in  
of claim 19, wherein the computer-executable instructions further comprises  
instructions for automated operations for:

monitoring, by a status-monitoring object defined by a content class in the  
directory schema, a status corresponding to an operation of the workflow;

determining that the status comprises a failure status;

responsive to the determining, taking a corrective action to advance the  
workflow in view of the failure status; and

~~wherein a content class in the directory schema defines the status-~~  
~~monitoring object.~~

34. (Currently amended) A The computer-readable medium as recited in  
of claim 19, wherein the instructions for executing the tasks further comprise  
instructions for:

updating a status corresponding to a task in the workflow; and



1 responsive to the updating, evaluating the workflow to determine that a  
2 next task of the tasks to be implemented.

3  
4 35. (Currently amended) A The computer-readable medium ~~as recited in~~  
5 of claim 19, wherein the tasks represent an inverse set of tasks that were previously  
6 performed as part of a different workflow.

7  
8 36. (Currently amended) A The computer-readable medium ~~as recited in~~  
9 of claim 19, wherein the tasks implement a policy with respect to one or more  
10 directory resources, and wherein the instructions for mapping the state change to  
11 the object further comprises instructions for automatically determining the  
12 workflow based on the policy.

13  
14 37. (Currently amended) A computing device comprising:  
15 a memory comprising computer-executable instructions for ~~dynamically~~  
16 automatically implementing workflow responsive to a directory object state  
17 change; and

18 a processor coupled to the memory for executing the computer-executable  
19 instructions, the computer-executable instructions comprising instructions for:

20 detecting a state change to an object in a directory; and  
21 responsive to detecting the state change:  
22 mapping the state change to the object to a workflow comprising a  
23 set of tasks; and  
24 executing the tasks to achieve a desired state in the directory.

1           38.   (Currently amended) A The computing device ~~as recited in~~ of claim  
2 37, wherein the instructions for executing the tasks further comprise instructions  
3 for storing the desired state.

4  
5           39.   (Currently amended) A The computing device ~~as recited in~~ of claim  
6 37, wherein the instructions for executing the tasks further comprise instructions  
7 for continuously executing an operation of a task of the tasks until convergence of  
8 the desired state is identified.

9  
10          40.   (Currently amended) A The computing device ~~as recited in~~ of claim  
11 37, wherein the instructions for executing the tasks further comprise instructions  
12 for storing a sequence of operations based on the tasks.

13  
14          41.   (Currently amended) A The computing device ~~as recited in~~ of claim  
15 37, wherein instructions for executing the tasks further comprise instructions for  
16 storing information corresponding to one or more directory objects to which the  
17 workflow applies.

18  
19          42.   (Currently amended) A The computing device ~~as recited in~~ of claim  
20 37, wherein the instructions for executing the tasks further comprise instructions  
21 for storing status information based on respective status of at least one subset of  
22 the tasks.

23  
24          43.   (Currently amended) A The computing device ~~as recited in~~ of claim  
25 37, wherein the instructions for mapping the state change to the object further

1 comprise instructions for evaluating the state change to the object based on a  
2 declarative condition stored as a text string on an object instance of a content class  
3 defined by the directory schema.  
4

5 44. (Currently amended) A The computing device ~~as recited in~~ of claim  
6 37, wherein a task of the tasks comprises any combination of one or more  
7 declarative conditions and one or more operations represented by a text string  
8 stored on an object instance of a content class defined by the directory schema.  
9

10 45. (Currently amended) A The computing device ~~as recited in~~ of claim  
11 37, wherein semantics of the workflow are based on a workflow schema.  
12

13 46. (Currently amended) A The computing device ~~as recited in~~ of claim  
14 37, wherein the instructions for mapping the state change to the object, semantics  
15 of the mapping are based on an event association object schema.  
16

17 47. (Currently amended) A The computing device ~~as recited in~~ of claim 37,  
18 wherein the instructions for executing the tasks, at least one subset of the tasks are  
19 executed with respect to one another based on an order of execution relationship  
20 comprising a finish-start relationship, a parallel execution relationship, a  
21 precedence constraint relationship, or a task priority relationship.  
22

23 48. (Currently amended) A The computing device ~~as recited in~~ of claim  
24 37, wherein the instructions for executing the tasks, at least one subset of the tasks  
25

1 are executed with respect to one another based on a precedence constraint  
2 relationship or a task priority relationship.

3  
4 49. (Currently amended) A The computing device ~~as recited in~~ of claim  
5 37, wherein the computer-executable instructions further comprise instructions  
6 for:

7 monitoring a status corresponding to a task of the tasks;  
8 storing the status on a status monitoring object; and  
9 wherein a content class in the directory schema defines the status-  
10 monitoring object.

11  
12 50. (Currently amended) A The computing device ~~as recited in~~ of claim  
13 37, wherein the computer-executable instructions further comprise instructions  
14 for:

15 monitoring a set of directory resources affected by the workflow;  
16 storing the directory resources on a status monitoring object; and  
17 wherein a content class in the directory schema defines the status-  
18 monitoring object.

19  
20 51. (Currently amended) A The computing device ~~as recited in~~ of claim  
21 37, wherein the computer-executable instructions further comprises instructions  
22 for:

23 monitoring a status corresponding to an operation of the workflow;  
24 determining that the status comprises a failure status;

1 responsive to the determining, taking a corrective action to advance the  
2 workflow in view of the failure status; and

3 wherein a content class in the directory schema defines the status-  
4 monitoring object.

5  
6 52. (Currently amended) A The computing device ~~as recited in~~ of claim  
7 37, wherein the instructions for executing the tasks further comprise instructions  
8 for:

9 updating a status corresponding to a task in the workflow; and  
10 responsive to the updating, evaluating the workflow to determine that a  
11 next task of the tasks to be implemented.

12  
13 53. (Currently amended) A The computing device ~~as recited in~~ of claim  
14 37, wherein the tasks represent an inverse set of tasks that were previously  
15 performed as part of a different workflow.

16  
17 54. (Currently amended) A The computing device ~~as recited in~~ of 37,  
18 wherein the tasks implement a policy with respect to one or more directory  
19 resources, and wherein the instructions for mapping the state change to the object  
20 further comprises instructions for automatically determining the workflow based  
21 on the policy.

22  
23 55. (Currently amended) A computing device comprising automated  
24 processing means for:

25 detecting a state change to an object in a directory; and

responsive to detecting the state change:

mapping the state change to the object to a workflow comprising a set of tasks; and

executing the tasks to achieve a desired state in the directory.

56. (Currently amended) A computing device as ~~recited in~~ of claim 55, wherein the means for executing the tasks further comprise means for storing the desired state.

57. (Currently amended) A computing device as ~~recited in~~ of claim 55, wherein the means for executing the tasks further comprise means for continuously executing an operation of a task of the tasks until convergence of the desired state is identified.

58. (Currently amended) A computing device as ~~recited in~~ of claim 55, wherein the means for executing the tasks further comprise means for storing a sequence of operations based on the tasks.

59. (Currently amended) A computing device as ~~recited in~~ of claim 55, wherein means for executing the tasks further comprise means for storing information corresponding to one or more directory objects to which the workflow applies.

1        60. (Currently amended) A computing device ~~as recited in~~ of claim 55,  
2 wherein the means for executing the tasks further comprise means for storing  
3 status information based on respective status of at least one subset of the tasks.  
4

5        61. (Currently amended) A computing device ~~as recited in~~ of claim 55,  
6 wherein the means for mapping the state change to the object further comprise  
7 means for evaluating the state change to the object based on a declarative  
8 condition stored as a text string on an object instance of a content class defined by  
9 the directory schema.  
10

11       62. (Currently amended) A computing device ~~as recited in~~ of claim 55,  
12 wherein a task of the tasks comprises any combination of one or more declarative  
13 conditions and one or more operations represented by a text string stored on an  
14 object instance of a content class defined by the directory schema.  
15

16       63. (Currently amended) A computing device ~~as recited in~~ of claim 55,  
17 wherein semantics of the workflow are based on a workflow schema.  
18

19       64. (Currently amended) A computing device ~~as recited in~~ of claim 55,  
20 wherein the means for mapping the state change to the object, semantics of the  
21 mapping are based on an event association object schema.  
22

23       65. (Currently amended) A computing device ~~as recited in~~ of claim 55,  
24 wherein the means for executing the tasks, at least one subset of the tasks are  
25 executed with respect to one another based on an order of execution relationship

1 comprising a finish-start relationship, a parallel execution relationship, a  
2 precedence constraint relationship, or a task priority relationship.

3  
4 66. (Currently amended) A computing device as ~~recited in~~ of claim 55,  
5 wherein the means for executing the tasks, at least one subset of the tasks are  
6 executed with respect to one another based on a precedence constraint relationship  
7 or a task priority relationship.

8  
9 67. (Currently amended) A computing device as ~~recited in~~ of claim 55,  
10 further comprising processing means for:

11 monitoring a status corresponding to a task of the tasks;

12 storing the status on a status monitoring object; and

13 wherein a content class in the directory schema defines the status-  
14 monitoring object.

15  
16 68. (Currently amended) A computing device as ~~recited in~~ of claim 55,  
17 further comprising automated processing means for:

18 monitoring a set of directory resources affected by the workflow;

19 storing the directory resources on a status monitoring object; and

20 wherein a content class in the directory schema defines the status-  
21 monitoring object.

22  
23 69. (Currently amended) A computing device as ~~recited in~~ of claim 55,  
24 further comprising automated processing means for:

25 monitoring a status corresponding to an operation of the workflow;



1       determining that the status comprises a failure status;  
2       responsive to the determining, taking a corrective action to advance the  
3       workflow in view of the failure status; and  
4       ~~wherein a content class in the directory schema defines the status-~~  
5       ~~monitoring object.~~

6  
7       70.   (Currently amended) A computing device ~~as recited in~~ of claim 55,  
8       wherein the automated processing means for executing the tasks further comprise  
9       means for:

10       updating a status corresponding to a task in the workflow; and  
11       responsive to the updating, evaluating the workflow to determine that a  
12       next task of the tasks to be implemented.

13  
14       71.   (Currently amended) A computing device ~~as recited in~~ of claim 55,  
15       wherein the tasks represent an inverse set of tasks that were previously performed  
16       as part of a different workflow.

17  
18       72.   (Currently amended) A computing device ~~as recited in~~ of claim 55,  
19       wherein the tasks implement a policy with respect to one or more directory  
20       resources, and wherein the means for mapping the state change to the object  
21       further comprise means for automatically determining the workflow based on the  
22       policy.

23  
24       73.   (Currently amended) A computer-readable medium comprising  
25       workflow enabled directory schema for automated workflow implementation by a

1 set of computer-program instructions executable by a processor, the workflow  
2 enable directory schema comprising a plurality of base object content classes, the  
3 workflow enabled directory schema comprising:

4 a provisioning service content class to detect an event corresponding to a  
5 state change in a directory object;

6 a workflow content class for storing a sequence of tasks;

7 an event association content class for storing declarative conditions to map  
8 the state change to the directory object to an object instance of the workflow  
9 content class; and

10 wherein the provisioning service content class is further configured to  
11 execute the sequence of tasks corresponding to the object instance.

12  
13 74. (Currently amended) ~~A workflow enabled directory schema as~~  
14 ~~recited in~~ The computer-readable medium of claim 73, wherein at least a subset of  
15 the base object content classes comprise a respective flexible attribute data field  
16 that indicates a data type, the data type being used to express various operational  
17 or data providing properties of the flexible attribute, the various operational or  
18 data providing properties being independent of the data type and independent of  
19 any modification to the workflow enabled directory schema.

20  
21 75. (Currently amended) ~~A workflow enabled directory schema as~~  
22 ~~recited in~~ The computer-readable medium of claim 73, wherein the sequence of  
23 tasks comprises any combination of a declarative conditions and operations  
24 corresponding to directory-based objects.

1           76. (Currently amended) ~~A workflow-enabled directory schema as~~  
2 ~~recited in~~ The computer-readable medium of claim 73, further comprising a status  
3 monitoring content class for storing a status of an object instance of the workflow  
4 content class.

5  
6           77. (Canceled)

7  
8           78. (Original) A computer comprising the processor coupled to a  
9 memory comprising the ~~a computer-readable medium of comprising a workflow~~  
10 ~~enabled directory schema as recited in claim 73.~~